Listing of Claims:

1. (Currently amended) ~~A composition for plasmon-enhanced multiband optochemical sensing or molecular identification comprising a molecule, a metal nanoparticle and a plasmon energy source.~~

A method of multiband optical sensing or molecular identification comprising: providing a composition capable of characteristic multiband spectral absorption or multiband spectral emission, the composition comprising a molecule and a nanoparticle nearby the molecule; allowing a sample containing an analyte to interact with the compositions; exciting the composition by a plasmon source; and monitoring the spectral absorption or spectral emission of each interaction between the composition and the analyte of the sample.

2. (Currently amended) The ~~composition~~ method of claim 1, wherein the molecule comprises an organic molecule, an inorganic molecule, a biomolecule or a microbe.
3. Cancelled
4. (Original amended) The method of claim 1, wherein the analyte is selected from the group consisting of glucose, inorganic molecule, organic molecule, protein, amino acid, oligonucleotide, lipid, sugar moiety, purine or pyrimidine, nucleoside or nucleotide.
5. (Currently amended) The ~~composition~~ method of claim 1, wherein the composition further comprising a spacer placed between the molecule and the nanoparticle and the spacer is selected from the group consisting of: a biorecognitive spacer, a dielectric spacer, a chemical link spacer, an analyte sensitive spacer or a polymer spacer.

6. (Currently amended) The ~~composition~~ method of claim 1, wherein the nanoparticle is made of a conducting material, a super-conducting material or a semi-conducting material.

7-12. Cancelled.

13. (Currently amended) The ~~composition~~ method of claim 1, wherein the composition is placed in a microarray, a bio-chip, a flow cell, an endoscope, a microscopic slide, a total internal reflection cell, a catheter, an optical fiber, a waveguide, a body, food, soil, water or air

14. Cancelled

15. (Original amended) The method of claim 1, wherein the method comprises analyses of a low excited state ~~and~~ or higher excited states of absorption bands ~~and~~ or fluorescence bands of the molecule.

16. Cancelled

17. (Currently amended) The method of claim ~~12~~ 1, wherein the ~~analyzing~~ monitoring of the multiband absorption or the multiband emission of the molecule is performed by at least one of the ~~following~~ selected techniques: absorption, fluorescence, hyperspectral imaging, Raman scattering, microscopy or microscopy imaging.

18. (Original amended) ~~A~~ The method of claim 1 is used for engineering multiband fluorescence lifetime of the molecule by changing the distances of the molecule ~~adjacent~~ to the nanoparticle. ~~and exposing the molecule to an amount of exciting radiation in the single-photon and multi-photons modes of excitation~~

19. (Original amended) ~~A~~ The method of claim 1 is used for increasing multiband fluorescence resonance energy transfer on a labeled molecule by changing the distances of the molecule ~~adjacent~~ to the nanoparticle. ~~and exposing the molecule to~~

~~an amount of exciting radiation in the single-photon and multi-photons modes of excitation~~

20. (Original amended) The method of claim 5, ~~1 and 12 for optical sensing with multiband emission and multiband absorption of the molecule~~ wherein the ~~analyte sensitive~~ spacer modifies multiband emission, ~~and~~ multiband absorption or multiband fluorescence lifetime of the molecule.

Listing of Claims:

1. A method of multiband optical sensing or molecular identification comprising: providing a composition capable of characteristic multiband spectral absorption or multiband spectral emission, the composition comprising a molecule, and a nanoparticle nearby the molecule; allowing a sample containing an analyte to interact with the compositions; exciting the composition by a plasmon source; and monitoring the spectral absorption or spectral emission of each interaction between the composition and the analyte of the sample.
2. The method of claim 1, wherein the molecule comprises an organic molecule, an inorganic molecule, a biomolecule or a microbe.
3. Cancelled
4. The method of claim 1, wherein the analyte is selected from the group consisting of glucose, inorganic molecule, organic molecule, protein, amino acid, oligonucleotide, lipid, sugar moiety, purine or pyrimidine, nucleoside or nucleotide.
5. The method of claim 1, wherein the composition further comprising a spacer placed between the molecule and the nanoparticle and the spacer is selected from the group consisting of: a biorecognitive spacer, a dielectric spacer, a chemical link spacer, an analyte sensitive spacer or a polymer spacer.
6. The method of claim 1, wherein the nanoparticle is made of a conducting material, a super-conducting material or a semi-conducting material.

7-12. Cancelled

13. The method of claim 1, wherein the composition is placed in a microarray, a bio-chip, a flow cell, an endoscope, a microscopic slide, a total internal reflection cell, a catheter, an optical fiber, a waveguide, a body, food, soil, water or air
14. Cancelled

15. The method of claim 1, wherein the method comprises analyses of a low excited state or higher excited states of absorption bands or fluorescence bands of the molecule.

16. Cancelled

17. The method of claim 1, wherein the monitoring of the multiband absorption or the multiband emission of the molecule is performed by at least one of the selected techniques: absorption, fluorescence, hyperspectral imaging, Raman scattering, microscopy or microscopy imaging.

18. The method of claim 1 is used for engineering multiband fluorescence lifetime of the molecule by changing the distances of the molecule to the nanoparticle.

19. The method of claim 1 is used for increasing multiband fluorescence resonance energy transfer on a labeled molecule by changing the distances of the molecule to the nanoparticle.

20. The method of claim 5, wherein the spacer modifies multiband emission, multiband absorption or multiband fluorescence lifetime of the molecule.